

25. (New) The method of claim 24, wherein the external authentication signal is transmittable via a mobile telephony network by a mobile radio-communication device connected to the receiver by a communication interface, the communication interface including at least one of a wire communication interface, an air communication interface, and an infrared interface communication interface.

26. (New) The receiver of claim 17, wherein the predetermined components of the receiver include a data decoder having an output connected to the control unit.--.

Remarks

This Preliminary Amendment cancels without prejudice original claims 1 to 13 and substitute claims 1 to 12 in the underlying PCT Application No. PCT/DE99/04045, and adds without prejudice new claims 14 to 26. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. In the Marked Up Version, double-underlining indicates added text and bracketing indicates deleted text. Approval and entry of the Substitute Specification (including Abstract) is respectfully requested.

The underlying PCT Application No. PCT/DE99/04045 includes an International Search Report, dated August 4, 2000. The Search Report includes a list of documents that were uncovered in the underlying PCT Application. A copy of the Search Report accompanies this Preliminary Amendment.

The underlying PCT application also includes an International Preliminary Examination Report, dated May 17, 2001, and an annex (including Revised/Substitute Claims 1 to 12). An English translation of the International Preliminary Examination Report and the annex accompanies this Preliminary Amendment.

Applicant asserts that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

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[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A RADIO
BROADCAST SIGNAL HAVING ENCODED CONTENTSFIELD OF THE INVENTION

5 The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone and also relates to a method for receiving a radio broadcast signal.

BACKGROUND INFORMATION

10 Program transmissions may be received in an unrestricted manner, and their use may be compensated for by the payment of appropriate taxes, e.g., to the GEMA (Gesellschaft fuer musikalische Auffuehrungs- und mechanische
15 Vervielfaeltigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights)) in Germany. However, offers and program content may be desired, which go beyond such broadcast transmissions, and which may only be realized by the user at an additional cost. Such offers may be
20 distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the signal, but the information contained in it only being rendered accessible to the user, when a person has paid an appropriate usage fee.

25 To this end, a paying customer receives a decoding device, which is to be looped into the signal path, between the antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is believed
30 to be disadvantageous that a separate, supplier-specific decoding device may be necessary for each supplier. Therefore, when a customer would like to accept such encoded offers, a person must first obtain a decoding device, and then may need

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to connect it. However, this is thought to be impractical, and it may discourage other potential customers from accepting encoded offers. Furthermore, the additional, required hardware expansion may be cost-intensive on the side of the user.

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SUMMARY OF THE INVENTION

An object of an exemplary embodiment and/or exemplary method of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

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For this purpose, a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in encoded form in the radio broadcast signal, and the signal decoder is operable so that the encoded signal is only decoded, when the signal decoder obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

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It is believed that this has the advantage that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This should allow information transmitted via a radio receiver to be released in a selective and controlled manner, e.g., in exchange for fees, using a standardized receiver. Only the data supplier has to worry about the remote-controlled enabling of the signal decoder.

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The user does not have to make any changes to his or her device for purposes of authentication. In addition, supplier-specific hardware should not be necessary, so that offers of various suppliers can be accepted, using a single device.

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To distribute individual authorizations, the external transmission path advantageously includes a mobile

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SUBSTITUTE SPECIFICATION

radio-communications device (mobile transceiver), which especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

A unified device, such as a radiophone, is made available by positioning (mounting) the mobile radio-communications device and the receiver in a common housing.

An exemplary embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the receiver, via a control bus. A communication link, in particular a wire, infrared, or air interface, is provided between the control unit and the external transmission path, and the control unit transmits the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

An input device that is connected to the control unit may be advantageously provided for the user to input data and commands.

A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit may be provided in an exemplary embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

To select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second signal paths being connected to the multiplexer that is controlled by the

audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

To select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

The exemplary method according to the present invention provides for an audio signal contained in the radio broadcast signal in encoded form and/or a data signal contained in the radio broadcast signal in encoded form being decoded, when an external authentication signal is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

It is believed that this has the advantage that paid offers can be made available per remote control, without the necessity of additional authentication hardware to be individually provided to each customer. Therefore, information may be transmitted via a radio receiver to be released in a selective and controlled manner, e.g., in exchange for fees, using a standardized receiver. Only the supplier of the encoded data signal or audio signal must worry about the remote-controlled enabling of a signal decoder. The user does not have to make any changes to his or her device for purposes of authentication. In addition, supplier-specific hardware should not be necessary, so that offers of various suppliers can be accepted, using a single device.

To distribute individual authentications, the authentication signal is transmitted via a mobile telephony network (mobile radio network), to a mobile radio-communications device connected to the receiver by a communications interface, especially by a wire, infrared, or air interface.

A receiver for the transmission path of the radio broadcast signal may be advantageously controlled via the external transmission path.

5 BRIEF DESCRIPTION OF THE DRAWING

The Figure shows an exemplary embodiment of a receiver according to the present invention.

DETAILED DESCRIPTION

10 The receiver 100 of the Figure includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input
15 (input/output) device 24. Signal decoder 12 includes an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data decoder 28 has a digital output (data output) 34, which is connected to
20 control unit 20, and via which the control data and user data are transmitted to control unit 20.

A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal
25 branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 decodes a data stream, which is processed further in control
30 unit 20, e.g., in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries out or performs conventional functions, such as sound control, volume control, balance control, or fade control. Which of the
35 signal branches 36 or 38 is presently active at signal decoder 12, depends on the control data transmitted via control bus 32.

Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, in part, the data stream coming from mobile radio-communications part 22, and selects appropriate data for controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder 28.

Therefore, the exemplary embodiment and/or exemplary method of the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10, certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In another exemplary embodiment and/or exemplary method of the present invention, there is provided a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, there may also be an arbitrary combination of AM/FM receiving part 10 and mobile radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.

ABSTRACT OF THE DISCLOSURE

A receiver for a radio broadcast signal, in particular a car radio, and a method for receiving a radio broadcast signal, including a signal decoder for decoding an audio signal contained in the radio broadcast signal in encoded form, and/or for decoding a data signal contained in the radio broadcast signal in encoded form, the signal decoder being operable so that the encoded signal is only decoded, when the signal decoder obtains an external authentication signal, which is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

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[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A
RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS[Technical Field]5 FIELD OF THE INVENTION

The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone[, according to the definition of the species in Claim 1. In addition, the present invention] and also relates to a method
10 for receiving a radio broadcast signal[, according to the definition of the species in Claim 11.

Background Information

15 Conventional program].

BACKGROUND INFORMATION

Program transmissions [can] may be received in an unrestricted manner, and their use [is] may be compensated for by the payment of appropriate taxes, e.g. to the GEMA

20 [[] (Gesellschaft fuer musikalische Auffuehrungs- und mechanische Vervielfaeltigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights) []) in Germany. However, offers and program content [are often] may be
25 desired, which go beyond [conventional] such broadcast transmissions, and [can] which may only be realized by the user at an additional cost. Such offers may be distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the
30 signal, but the information contained in it only being rendered accessible to the user, when [he or she] a person has paid an appropriate usage fee.

To this end, a paying customer receives a decoding device,
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antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is believed to be disadvantageous that a separate, supplier-specific decoding device [is] may be necessary for each supplier.

5 Therefore, when a customer would like to accept such encoded offers, [he or she] a person must first obtain a decoding device, and [generally] then may need to connect it [himself or herself.]. However, this is thought to be impractical, and it may discourage [s many] other potential customers from
10 accepting encoded offers. Furthermore, the additional, required hardware expansion [is] may be cost-intensive on the side of the user. [

Description of the Present Invention, Object, Solution,
15 Advantages

The object]

20 SUMMARY OF THE INVENTION

An object of an exemplary embodiment and/or exemplary method of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

25 [This object is achieved by a receiver of the type mentioned above, having the features indicated in Claim 1, and by a method of the type mentioned above, having the features indicated in Claim 11.

30]For this purpose, [the present invention provides a receiver of the type mentioned above with]a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in
35 encoded form in the radio broadcast signal, and the signal decoder [being designed in such a manner,] is operable so that the encoded signal is only decoded, when the signal decoder

obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

5 [T]It is believed that this has the advantage[,] that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This should allow[s] information transmitted via [[by]]a radio receiver to be
10 released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only the data supplier has to worry about the remote-controlled enabling of the signal decoder. The user does not have to make any changes to his or her device for purposes of
15 authentication. In addition, supplier-specific hardware [is]should not be necessary, so that offers of various suppliers can be accepted, using a single device.

[Preferred further refinements of the receiver are described in Claims 2 through 10.

In order t)To distribute individual authorizations, the external transmission path advantageously includes a mobile radio-communications device [[mobile transceiver]], which
25 especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

30 A unified device, such as a radiophone, is made available by positioning [[mounting]] the mobile radio-communications device and the receiver in a common housing.

35 A[preferred]n exemplary embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the

receiver, via a control bus[; a]. A communication link, in particular a wire, infrared, or air interface, [being] is provided between the control unit and the external transmission path, and the control unit

5 [transmitting] transmits the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

An input device that is connected to the control unit [is] may
10 be advantageously provided for the user to input data and commands.

A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit [are] may be provided in a [preferred, specific] n exemplary embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

[In order t] To select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second
25 signal paths being connected to the multiplexer that is controlled by the audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

[In order t] To select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

35 The [above-mentioned type of] exemplary method according to the present invention provides for an audio signal contained in

the radio broadcast signal in encoded form and/or a data signal contained in the radio broadcast signal in encoded form being decoded, when an external authentication signal is received via an external transmission path that is different from the transmission path of the radio broadcast signal.

[T]It is believed that this has the advantage[,] that paid offers can be made available per remote control, without the necessity of additional authentication hardware to be individually provided to each customer. Therefore, [it is possible for]information may be transmitted via [[by]] a radio receiver to be released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only the supplier of the encoded data signal or audio signal must worry about the remote-controlled enabling of a signal decoder. The user does not have to make any changes to his or her device for purposes of authentication. In addition, supplier-specific hardware [is]should not be necessary, so that offers of various suppliers can be accepted, using a single device.

[Advantageous refinements of the method are described in Claims 12 and 13.

In order t)To distribute individual authentications, the authentication signal is transmitted via a mobile telephony network [[mobile radio network[]], to a mobile radio-communications device connected to the receiver by a communications interface, especially by a wire, infrared, or air interface.

A receiver for the transmission path of the radio broadcast signal [is]may be advantageously controlled via the external transmission path.

[Brief Description of the Drawing

The present invention is explained below in detail, using the enclosed drawing. The one figure of the drawing shows a preferred] BRIEF DESCRIPTION OF THE DRAWING

5 The Figure shows an exemplary embodiment of a receiver according to the present invention.

[Best Mode of Implementing the Present Invention

10 The preferred embodiment of a receiver 100 according to the present invention, represented in Figure 1,] DETAILED DESCRIPTION

15 The receiver 100 of the Figure includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input 20 [[](input/output)[]]] device 24. Signal decoder 12 includes an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data decoder 28 has a digital output 20 [[](data output)[]]] 34, which is connected to control unit 20, and via which the control data and user data are transmitted to control unit 20.

25 A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 30 decodes a data stream, which is processed further in control unit 20, e.g. in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries out or performs conventional functions, such as sound control, 35 volume control, balance control, or fade control. Which of the signal branches 36 or 38 is presently active at signal decoder

12, depends on the control data transmitted via control bus 32.

Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, [inter alia]in part, the data stream coming from mobile radio-communications part 22, and selects appropriate data for controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder 28.

Therefore, the exemplary embodiment and/or exemplary method of the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10, certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In [a particularly preferred, specific]another exemplary embodiment[,] and/or exemplary method of the present invention, there is provide[s]d a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, [it is]there may also [possible to have]be an arbitrary combination of AM/FM receiving part 10 and mobile

radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.

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[Abstract

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ABSTRACT OF THE DISCLOSURE

[The present invention relates to a] A receiver[(100)] for a
radio broadcast signal, in particular a car radio, [as well
5 as] and a method for receiving a radio broadcast signal[. In
this connection,], including a signal decoder [(12) is
provided, which decodes] for decoding an audio signal contained
in the radio broadcast signal in encoded form, and/or
[decodes] for decoding a data signal contained in the radio
10 broadcast signal in encoded form, the signal decoder [(12)
]being [designed in such a manner,] operable so that the
encoded signal is only decoded, when the signal decoder[(12)]
obtains an external authentication signal, which is received
via an external transmission path that is different from the
15 transmission path of the radio broadcast signal.

[(Fig.)]

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